

**Hanford Federal Facility Agreement and Consent Order
(Tri-Party Agreement)**

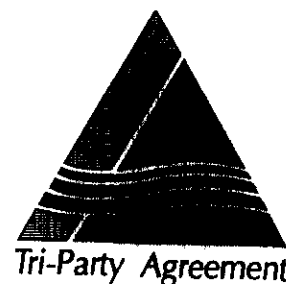
Proposed Tri-Party Agreement Modifications for

**Initial Single Shell Tank Waste Management Area
Corrective Actions, Vadose Zone and Groundwater
Characterization, Assessment, and the Integration of
Vadose Zone and Groundwater Activities at Specified**

Associated Sites



**Public Comment Period
February 16 to April 1, 1999**



***Hanford Federal Facility Agreement and Consent Order
(Tri-Party Agreement)***

Proposed Tri-Party Agreement Modifications

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Changes Proposed To Hanford's Tri-Party Agreement

Initial Single-Shell Tank Waste Management Area Corrective Actions

Associated Vadose Zone and Groundwater Characterization and Assessment Activities

Integration of Vadose Zone and Groundwater Activities

U.S. Department of Energy • U.S. Environmental Protection Agency • Washington State Department of Ecology

Request For Public Comment

Your review and comment is requested on proposed new Tri-Party Agreement milestones and target dates for groundwater and vadose zone actions for the U.S. Department of Energy's (DOE) single-shell tank waste management areas. The proposed changes will direct single-shell tank waste management area corrective actions (actions taken under Washington's State's Hazardous Waste Management Act (HWMA) and the federal Resource Conservation and Recovery Act (RCRA)). These actions are designed to allow the Tri-Parties to determine the nature and extent of contamination from single-shell tank leaks, to assess risks, to identify actions that need to be taken, and to aid in the cleanup and closure of the tank farms on the Central Plateau in the 200 Area of the Hanford Site.

The DOE, the U.S. Environmental Protection Agency (EPA), and the Washington State Department of Ecology (Ecology) are seeking public comment on the proposed changes from February 16 through April 1, 1999. All public comments will be considered and responded to before final decisions are made. Because these proposed changes to the Tri-Party Agreement are consistent with the existing project schedule and expected funding, public meetings are not currently scheduled. Should substantial public interest indicate a need for meetings, the Tri-Parties will respond accordingly.

If you would like to review proposed modifications, please visit the public information repository nearest you, or review the document at the Tri-Party Agreement homepage: <http://www.hanford.gov>.

To request a copy of proposed modifications, or to submit comments either written or electronically, contact:

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Background

The U.S. Department of Energy's Office of River Protection's mission is to store, treat, and immobilize high-level radioactive waste presently contained in 12 single-shell tank farms and in six double-shell tank farms located on the Central Plateau in the 200 Area of the Hanford Site. The 12 single-shell tank farms are grouped into seven waste management areas for purposes of groundwater assessment and monitoring. These tank farms contain 149 single-shell tanks which are classed as hazardous waste management units regulated under Washington State's HWMA and its implementing requirements. The single-shell tanks are currently operating under interim status pending closure.

Initial Plan

Releases from tank farm areas have caused surface, underlying vadose zone, and groundwater contamination. On July 10, 1998, Ecology directed DOE to develop and submit a corrective action plan covering the eight single-shell tank farms where groundwater contaminants from tank leaks have been documented. In response, DOE invoked the dispute resolution process of the Tri-Party Agreement and asked that the Tri-Parties work together in developing a resolution. Subsequent correspondence between the Tri-Parties elevated this dispute and initiated Tri-Party Agreement negotiations that were held from October 21 to December 11, 1998. The changes proposed here constitute an initial corrective action plan and were developed as a resolution of the dispute.

Principal Issues

The Tri-Parties' tentative agreement identifies initial actions necessary for DOE to comply with State and federal corrective action requirements. These initial actions in response to single-shell tank leaks and associated past tank waste discharges will be followed by additional Tri-Party Agreement commitments as new information is acquired. These proposed changes have been coordinated with site-wide groundwater and vadose zone activities under the Groundwater/Vadose Zone Integration Project.

New Strategy

Key elements of the proposed milestone change include:

- **The initiation of vadose zone characterization at the single-shell tank farms.** Under the proposed modification DOE will initiate single-shell tank farm waste management area vadose zone characterization work beginning in mid-1999. This work will focus on characterization borehole installation at the S-SX tank farm.
- **Interim measures identified to date as initial response actions to single-shell tank leaks.** These actions include assessment of data collected to date, and initial activities designed to minimize intrusion and contaminant migration to groundwater. The development of corrective action documentation at single-shell tank waste management areas is also designed to enable the Tri-Parties to identify additional interim measures, as well as support single-shell tank waste retrieval and eventual closure of the tank farms.

- **Commitments among the Tri-Parties regarding the use of HWMA and RCRA corrective action processes.** The Tri-Parties have selected the corrective action process at Section 7.0 of the Tri-Party Agreement for use in developing necessary documentation and to aid in being able to identify necessary actions. Corrective actions will be coordinated over time in order to support retrieval and closure of the single-shell storage tanks under the HWMA and major milestone series M-45-00 of the Tri-Party Agreement. The use of the Tri-Party Agreement's corrective action process provides a framework for groundwater and vadose zone investigations, which will be planned and implemented to support decisions on interim measures, corrective measures, waste retrieval, and eventual closure. This does not affect the applicability of state and federal hazardous waste programs or supersede processes previously established under the Tri-Party Agreement.
- **Integration of groundwater and vadose zone activities related to corrective actions at USDOE's single-shell tank waste management areas.** Groundwater and vadose zone activities addressed in these milestone changes include activities pertaining to hazardous waste treatment, storage, and disposal units managed by DOE's Office of River Protection. Tank Farm activities will be fully integrated with DOE's Groundwater/Vadose Zone Integration Project.

Ecology and DOE agree that work under the proposed milestone change will be managed under one unified schedule incorporating Tri-Party Agreement milestones, DOE (internal agency) milestones, and DOE contractor milestones. On approval of this change, Hanford Site internal planning, management, and budget documents will be modified accordingly.

Historical Note

The U.S. Department of Energy's Richland Operations Office owns the Hanford Site in southeastern Washington State. Hanford was established during World War II as part of the top secret Manhattan Project to produce plutonium for nuclear weapons. Weapons material production was halted in the late 1980s. The Hanford Site is now engaged in the world's largest cleanup effort to deal with the legacy of radioactive and hazardous wastes that resulted from the plutonium production era. Hanford's cleanup program is regulated by the U.S. Environmental Protection Agency and the Washington Department of Ecology under a long term compliance contract called the Tri-Party Agreement. This agreement sets the framework and timelines on the cleanup work so that Hanford meets current environmental standards.

Description of Proposed Milestones*

Task Name	Due Date	Description
M-45-50	9/2000	Complete development of a spectral gamma logging baseline for single-shell tank farms
M-45-50-T01	3/1999	Issue final baseline spectral gamma logging report for A tank farm
M-45-50-T02	9/1999	Issue final baseline spectral gamma logging report for T tank farm
M-45-50-T03	3/2000	Issue final baseline spectral gamma logging report for B tank farm
M-45-51	8/1999	Submit DOE's Phase 1 RCRA Facility Investigation/Corrective Measures Study (RFI/CMS) Work Plan for Single-Shell Tank Waste Management Areas
M-45-52	10/1999	Submit Site-Specific Single-Shell Tank Waste Management Area Phase 1 RFI/CMS Work Plan addenda for waste management area S-SX
M-45-52-T01	4/1999	Submit preliminary site-specific Single-Shell Tank Waste Management Area Phase 1 RFI/CMS Work Plan addenda for waste management area S-SX
M-45-53	5/2000	Submit site-specific Single-Shell Tank Waste Management Area Phase 1 RFI/CMS Work Plan addenda for waste management area B-BX-BY
M-45-54	12/2000	Submit site-specific Single-Shell Tank Waste Management Area Phase 1 RFI/CMS Work Plan addenda for waste management areas T and TX-TY
M-45-55-T01	4/2001	Submit Field Investigation Report pursuant to the site-specific Single-Shell Tank Waste Management Area Phase 1 RFI/CMS Work Plan addenda for waste management area S-SX
M-45-55-T02	5/2002	Submit Field Investigation Report pursuant to the site-specific Single-Shell Tank Waste Management Area Phase 1 RFI/CMS Work Plan addenda for waste management area B-BX-BY
M-45-55-T03	6/2003	Submit Field Investigation Report pursuant to the site-specific single-shell tank waste management area Phase 1 RFI/CMS Work Plan addenda for waste management areas T and TX-TY
M-45-55	2/2004	Submit Phase 1 RFI Report integrating results of data gathering activities and evaluations for waste management areas S-SX, T, TX-TY, and B-BX-BY and related groundwater monitoring activities
M-45-56	TBD	Complete implementation of agreed-to interim measures
M-45-56-T01	10/1999	Summarize results of engineering studies and recommendations on isolating water lines in or near single-shell tank waste management areas, sealing abandoned wells in or near single-shell tank waste management areas, and controlling surface drainage at single-shell tank waste management areas and submit results to Ecology
M-45-57	6/1999	Complete upgrading of leak-tight caps on monitoring drywells around single-shell tanks
M-45-58	TBD	Submit a Corrective Measures Study for interim corrective measures (pending results and conclusions from the Phase 1 RFI Report--Milestone M-45-55 or subsequent RFI Reports)
M-45-59	TBD	Control surface water infiltration pathways as needed to control or significantly reduce the likelihood of migration of subsurface contamination to groundwater at the single-shell tank waste management areas (pending the Corrective Measures Report, Milestone M-45-58, and implementation of other interim corrective measures)
M-45-59-T01	7/1999	Summarize results of Innovative Treatment Remedial Demonstration workshop, with conclusions and recommendations for testing and evaluation of interim surface barrier concepts and submit results to Ecology
M-45-60	**	Submit DOE's RFI/CMS Work Plan for Single-Shell Tank Waste Management Areas as Tri-Party Agreement primary document

* Additional commitments among the Tri-Parties are included in the M-45-05 Milestone change package.

** Due date is six months following RCRA Facility Investigation Report approval

Hanford Public Information Repository Locations

SEATTLE

University of Washington
Suzzalo Library
Government Publications Room
(206) 543-4664 ATTN: Eleanor Chase

SPOKANE

Gonzaga University
Tri-Party Information Repository
Foley Center
East 502 Boone
(509) 323-3839 ATTN: Connie Scappelli

RICHLAND

U.S. Department of Energy Public Reading Room
WSU Consolidated Information Center, Room 101L
2770 University Drive
(509) 376-8583 ATTN: Terri Traub

PORTLAND

Portland State University, Branford Price Millar Library
Science and Engineering Floor
Tri-Party Information Repository
934 SW Harrison and Park
(503) 725-3690 ATTN: Michael Bowman

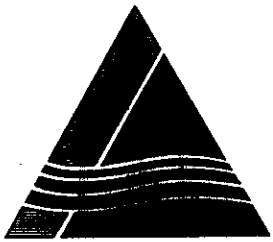
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or call the Hanford Cleanup Toll Free Line 1-800-321-2008

**Conclusion Agreement on Negotiation Under Milestone M-45
(Complete Closure of All Single Shell Tank Farms)**



Tri-Party Agreement

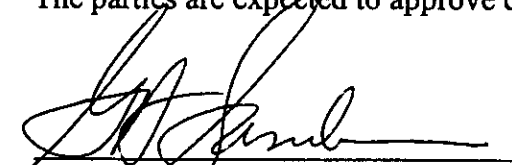
CONCLUSION AGREEMENT ON NEGOTIATION UNDER MILESTONE M-45 (COMPLETE CLOSURE OF ALL SINGLE SHELL TANK FARMS)

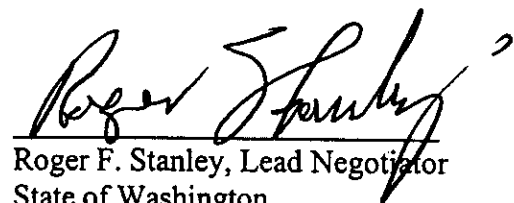
The State of Washington Department of Ecology and the U. S. Department of Energy (the parties) have concluded negotiations on commitments regarding initial Single-Shell Tank Waste Management Area (WMA) corrective actions, vadose zone and groundwater characterization, assessment, and the integration of vadose zone and groundwater activities at specified associated sites. A tentative agreement has been reached and a package of changes to the Hanford Federal Facility Agreement and Consent Order (Agreement) has been developed and found mutually acceptable to the parties. These changes are attached to this Negotiation Conclusion Agreement. The parties also agreed during the course of negotiations to hold further discussion on potential efficiencies in the regulatory Data Quality Objectives (DQOs).

It is the intent of the parties that provisions of early milestone commitments in this change request be fulfilled as the change request is undergoing the process for finalization. Ecology and DOE also agree to remove the issue of applicability of the State Model Toxics Control Act (MTCA) from the scope of these proposed M-45-98-03 commitments. The parties agree that the issues associated with the applicability of MTCA need not be resolved in order to finalize this change request, however, discussions on this issue will continue between the parties.

It is the parties' intent to submit the Tentative Agreement for a 45-day public comment period to run from approximately February 1, 1999 to March 17, 1999. Specific Public Comment Period dates will be coordinated to ensure HAB opportunity for review and comment. Following the public comment period, the parties will jointly prepare responses to public comments that have been received. The parties further agree to minimize additional delay, and if the parties are not able to resolve all issues with regard to comments, any unresolved matters shall be referred back for dispute resolution under the Tri-Party Agreement, Article VIII. However, any dispute resulting from these negotiations shall be initiated at the Inter Agency Management Team level as described in the Tri-Party Agreement.

The parties are expected to approve changes to the Agreement by April 15, 1999.


George H. Sanders, Lead Negotiator
U.S. Department of Energy
Richland Operations Office


Roger F. Stanley, Lead Negotiator
State of Washington
Department of Ecology

JAN 08 1999

**Hanford Federal Facility Agreement and Consent Order
Change Request**

M-45-98-03

Change Number M-45-98-03	Federal Facility Agreement and Consent Order Change Control Form Do not use blue ink. Type or print using black ink.	Date January 8, 1999 Draft
Originator Ecology		Phone
Class of Change <input type="checkbox"/> I – Signatories <input checked="" type="checkbox"/> II – Executive Manager <input type="checkbox"/> III – Project Manager		
Change Title Agreement Commitments Regarding Initial Single-Shell Tank Waste Management Area (WMA) Corrective Actions, Vadose Zone and Groundwater Characterization, Assessment, and the Integration of Vadose Zone and Groundwater Activities at specified Associated Sites.		
Description/Justification of Change <u>Introduction:</u> The U. S. Department of Energy's (DOE's) Tank Waste Remediation System (TWRS) program mission is to store, treat, and immobilize high level radioactive waste presently contained in twenty eight (28) double-shell tanks and one hundred forty nine (149) single-shell tanks (SSTs). The 149 SSTs are hazardous waste management units regulated under Washington's Hazardous Waste Management Act (HWMA, Chapter 70.105 RCW) and its implementing requirements (Washington's Dangerous Waste Regulations at Chapter 173-303 WAC). The SSTs are currently operating under interim status pending closure. They will be closed as a treatment, storage, and/or disposal (TSD) facility under the HWMA and Major Milestone series M-45-00 of the <u>Hanford Federal Facility Agreement and Consent Order</u> (Agreement). The twelve (12) SST farms are grouped into seven (7) Waste Management Areas (WMAs) for purposes of HWMA groundwater assessment and monitoring. To date, tank leaks and associated releases of tank waste including dangerous wastes and dangerous waste constituents have resulted in groundwater contamination documented at four (4) SST WMAs (See Attachment One). These 4 WMAs are WMA S-SX (containing S and SX single-shell tank farms), WMA B-BX-BY (containing B, BX, and BY single-shell tank farms), WMA T (containing the T single-shell tank farm), and WMA TX-TY (containing TX and TY single-shell tank farms).		
Impact of Change Modification of Agreement requirements including major milestone series M-45-00 (Complete Closure of all Single-Shell Tank Farms) Appendix D interim milestones and target dates documenting: (1) integration of groundwater and vadose zone activities related to corrective actions at DOE's SST WMAs, (2) interim measures identified to-date as initial response actions to SST leaks, and (3) commitments between the parties regarding the utilization of HWMA and RCRA corrective action processes. Ecology and DOE agree that work under this M-45-98-03 change will be managed through one unified schedule incorporating Agreement milestones, DOE (internal agency) milestones, and DOE contractor baseline. On approval of this M-45-98-03 change, Hanford site internal planning, management, and budget documents will be modified accordingly.		
Affected Documents The Hanford Federal Facility Agreement and Consent Order, as amended, and Hanford site internal planning, management, and budget documents (e.g., Baseline Change Control documents, Multi Year Work Plans, Sitewide System Engineering Control documents, Project Management Plans, and DOE's Hanford Site Groundwater/Vadose Zone Integration Project Long Range Plan).		
Approvals		
DOE	Date	<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved
EPA	Date	<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved
Ecology	Date	<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved

Description/Justification of Change (continued)

Releases from tank farm areas have caused surface, underlying vadose zone and groundwater contamination which has led to a number of regulatory responses including: (1) Compliance and Assessment level groundwater monitoring pursuant to the HWMA and its implementing requirements (See interim status standards incorporated by reference at Chapter 173.303.400 WAC, i.e., 40 CFR Part 265 Subpart F [Ground Water Monitoring]); and 40 CFR Part 265, Subpart J [Tank Systems]; and (2) Corrective Action pursuant to Chapter 173.303.646 WAC, and Agreement processes.

On July 10, 1998, Ecology called on the DOE to develop and submit a corrective action plan outside of the Agreement for the S, SX, B, BX, BY, T, TX, and TY SST farms, and that this plan at a minimum: "(1) provide information equivalent to a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) and will include provisions to characterize the vadose zone and aquifer beneath the tank farms, (2) define the sources, nature, and extent of contamination, and (3) identify actual or potential receptors".¹ In response, the DOE invoked the dispute resolution procedures of the Agreement, and asked that the parties work with one another in developing a resolution.² Subsequent correspondence between the agencies³ elevated this dispute to the agencies' Inter Agency Management Integration Team (IAMIT), further described their respective concerns, and documented conditions under which the parties would attempt to resolve this dispute through Agreement negotiations. This dispute was subsequently suspended through December 11, 1998. This Agreement Change Control Form #M-45-98-03 has been developed as a resolution of this dispute.

Notwithstanding DOE's groundwater monitoring program which presently is in compliance with HWMA and RCRA interim status standards for TSDs, this Change Control Form identifies initial actions necessary for the DOE to comply with the corrective action requirements of Chapter 173-303-646 WAC. These initial actions to respond to SST leaks at SST WMAs and past tank waste discharges will be followed by additional Agreement commitments as new information is acquired (e.g., additional interim measures, Corrective Measures Study (CMS) documentation, identification of additional WMAs, etc.). This Agreement modification has been coordinated with site-wide groundwater/vadose zone activities under the Groundwater/Vadose Zone (GW/VZ) Integration Project.

Many activities addressed by this Change Control Form are also incorporated into DOE's GW/VZ Integration Project. One of the purposes of the Integration Project is to allow a comprehensive evaluation of ongoing activities to provide for improved coordination among projects, better use of resources, and elimination of potential redundancies within the projects. The GW/VZ Integration Project will publish its "Project Baseline/Long Range Plan" in early calendar year 1999. The integration of TWRS and Environmental Restoration (ER) characterization and remediation efforts is a clear objective of the plan. On approval, these Change Number M-45-98-03 requirements contained herein will: 1) be incorporated within the "Project Baseline/ Long Range Plan" plan, and 2) will be subject to modification to the same extent as other Agreement requirements.

Project Integration and Use of RCRA/HWMA Corrective Action Processes

Groundwater and vadose zone activities addressed by this Change Control Form include activities pertaining to RCRA TSD Units managed by DOE's TWRS Program (the single-shell tank system, per se) and "associated site" (as listed in Attachment One) activities. The parties agree that these activities should be managed in a fully integrated fashion and that overall integration is a function of the Hanford Site GW/VZ Integration Project. Major elements to be integrated under the GW/VZ Integration Project that are related to the SST WMAs include:

¹ Letter: Mike Wilson, Program Manager, Washington Department of Ecology, Nuclear Waste Program to Jackson Kinzer, Program Manager, Tank Waste Remediation System, U. S. Department of Energy, Richland Operations Office, July 10, 1998.

² Letter: 98-EAP-400, George Sanders, Tri Party Agreement Administrator, U.S. Department of Energy, Richland Operations Office to Mike Wilson, Program Manager, Washington Department of Ecology, Nuclear Waste Program, July 22, 1998.

³ Letters: (1) 98-EAP-464, George Sanders, Tri Party Agreement Administrator, U.S. Department of Energy, Richland Operations Office to Mike Wilson, Program Manager, Washington Department of Ecology, Nuclear Waste Program, August 21, 1998, (2) Mike Wilson, Program Manager, Washington Department of Ecology, Nuclear Waste Program to George Sanders, Tri-Party Agreement Administrator, U. S. Department of Energy, Richland Operations Office, September 4, 1998, and (3) 98-EAP-508, James E. Rasmussen, Director, Environmental Assurance, Permits and Policy, U. S. Department of Energy, Richland Operations Office to Mike Wilson, Program Manager, Washington Department of Ecology, Nuclear Waste Program, September 11, 1998.

- (1) SST "RCRA" compliance and assessment level groundwater monitoring programs (This includes associated borehole characterization activities),
- (2) Groundwater and vadose zone related activities associated with SST farms S, SX, B, BX, BY, T, TX, TY, and remaining tank farms as necessary (e.g., groundwater and vadose zone characterization, RCRA/HWMA RFI/CMS document development),
- (3) Associated groundwater/vadose zone activities undertaken at past practice sites (as listed in Attachment One) historically associated with, but not formally classified as part of SST farm "TSD" Units, and
- (4) Groundwater and vadose zone related work undertaken by TWRS in support of tank waste retrieval (e.g., Hanford Tanks Initiative), tank waste processing (e.g., Immobilized Low Activity Waste Performance Assessments), and tank farm closure.

In selecting a regulatory process best suited to the achievement of compliance with State and federal hazardous waste program requirements, and the integration of the above activities, the parties have agreed to use the Agreement RCRA Corrective Action process (Section 7.0). Corrective actions will be coordinated over time in order to support closure of the single-shell storage tanks under the HWMA, and Agreement Major Milestone M-45-00. While use of the RCRA Corrective Action process provides a framework within which groundwater and vadose zone investigations will be planned and carried out to support decisions on interim measures, corrective measures, waste retrieval, and closure, this use does not affect the applicability of state and federal hazardous waste programs or supersede regulatory processes previously established under Tri-Party Agreement Major Milestone M-45-00. Thus while the RCRA Corrective Action process may be used to establish requirements for interim measures and/or corrective measures in SST farms, it will not be used to define tank farm closure requirements. As prescribed under Tri-Party Agreement Major Milestone M-45-00 SST farms will be closed in accordance with WAC 173-303-610. The Phase 1 RFI Report that will be produced following investigation of the SST WMAs under RCRA assessment will provide results and conclusions with recommendations for subsequent investigative efforts. These decisions require an understanding of the effectiveness and cost of measures that can be taken to avoid or limit additional releases, or to control subsurface movement of contaminants to minimize additional insult to human health and the environment from SST wastes. SST leaks, potential leaks during retrieval, and residual waste that may remain in tanks and tank farm ancillary equipment at closure are contaminant sources within the purview of DOE's (TWRS) SST Program.

Understanding gained from investigating subsurface contaminant distribution and movement will support SST retrieval and closure decisions associated with the following:

- Retrieval performance criteria,
- Deployment of retrieval technologies,
- Retrieval related operational constraints,
- Control of retrieval leaks,
- Amount of waste that must be retrieved from tanks for closure.

The interrelationship of the SST Program and the RCRA Correction Action process is also illustrated in Attachment Two.

DOE will continue with and complete closure and corrective action as required to protect human health and the environment and to meet associated regulatory requirements under the HWMA and RCRA. Information and data collected to support decisions regarding the control or elimination of releases will also be utilized to support closure and associated corrective actions. To the extent practicable, interim measures and corrective measures to control releases and potential releases will be consistent with anticipated closure and final corrective measures.

Development of the Phase 1 RFI/CMS Work Plan including site-specific SST WMA Phase 1 RFI/CMS Work Plan addenda will be designed to meet regulatory objectives which shall include the following: (1) compliance with interim status standards and corrective action requirements of the HWMA and RCRA (i.e., requirements which apply in the instance of releases from a TSD facility), (2) the generation of groundwater/vadose zone characterization data and information necessary to: (i) define the sources, nature, and extent of vadose zone and aquifer contamination, (ii) identify actual and potential receptors (via air, land, water and groundwater pathways), (iii) determine the need for additional interim measures and interim corrective measures, and (3) support closure of SST WMA TSDs under the HWMA and RCRA. Site-specific Phase 1 RFI/CMS Work Plan addenda will also be designed to provide input for prioritizing well installation,

locating wells, and collecting soil samples during well construction, and will consider groundwater sampling needs that can be accommodated in new vadose zone characterization boreholes. Past practice liquid discharge sites associated with the SST WMAs (as listed in Attachment One) and managed by DOE's ER Program will be characterized as necessary, to address identified data gaps for the SST WMAs. Contaminant transport modeling and risk assessment to guide characterization and to support SST WMA corrective action decisions will be coordinated with groundwater models and risk criteria that are being developed through the GW/VZ Integration Project. Conclusions and recommendations in site-specific Phase 1 RFI/CMS Work Plans will incorporate results and conclusions from groundwater monitoring and will be coordinated with assessment activities and remediation/corrective action decisions at nearby past practice sites.

The RFI/CMS Work Plan process provides the overall framework to guide groundwater/vadose zone investigation and decision making for SST WMAs. The Phase 1 RFI/CMS Work Plan will be used to provide the strategy and coordination for the initial investigation of the SST WMAs under RCRA Assessment. Site-specific Phase 1 Work Plan addenda will be prepared in accordance with the objectives as specified in the Phase 1 RFI/CMS Work Plan. Upon completion of each site-specific investigation, information, analyses and recommendations will be documented in a Field Investigation Report. Following completion of all work as outlined in the Phase 1 RFI/CMS Work Plan a Phase 1 RFI Report will be prepared that provides a roll-up of the site-specific Field Investigation Reports and conclusions and recommendations on additional interim measures and/or further investigation. The parties recognize it is likely that more than one iteration of site specific investigation will be conducted prior to obtaining sufficient information to proceed to decision making documentation. If so, updates to the RFI/CMS Work Plan will be made to collect additional data for decisions on interim corrective measures, retrieval and closure. Approval of the Phase 1 RFI Report and any subsequent RFI Reports will provide the basis for generation of the Final RFI/CMS Work Plan. This work plan and subsequent reports will be used to make decisions on corrective measures, retrieval and closure. The iterative nature of this process is illustrated in Attachment Two.

Initial Work Plan Data Evaluation and Subsurface Modeling

In order to ensure that data utilized in the development of site-specific SST WMA RFI/CMS Work Plan addenda is both sound and adequate, a data evaluation and preliminary subsurface modeling effort will be undertaken. For efficiency, this effort will proceed concurrent with initiation of interim measures at the SST WMAs.

Existing data will be evaluated to support the development of conceptual models, to support data quality objective (DQO) efforts, and to identify uncertainties and data gaps. Data of limited value will be discarded or used accordingly. This work will support the development of site-specific SST WMA RFI Work Plans and the initiation of field activities in FY 1999. Evaluation and modeling activities will be undertaken by DOE, with the participation of Ecology, and will include, but not be limited to, the following:

- (1) Compilation of existing data and interpretation of lithologic samples, lithologic borehole logs, well construction documents, analytical results, tank leak information, occurrence reports, tank farm infrastructure information, and applicable results of previous modeling exercises,
- (2) The evaluation and interpretation of previously collected data, and
- (3) The development of a preliminary subsurface tank farm framework/model.

These actions will allow DOE and Ecology to assess the quality and representativeness of the data, the site-specific nature of the data, previous conclusions and/or predictions relevant to the site, and any previously published interpretations that are applicable for the site or site related issues. The identification of data gaps will serve as a critical input in developing site-specific SST WMA RFI/CMS Work Plan addenda, necessary fieldwork, and subsequent corrective action documentation.

Implementation of Initial Interim Measures

The development of corrective action documentation at SST WMAs will enable the parties to identify additional interim measures and interim corrective measures, as well as support the eventual closure of the SST TSDs. To date a wide

range of near term interim measures and supporting activities have been identified and agreed to by the parties. Some of these interim measures are relatively straightforward and do not require vadose zone characterization to optimize engineering designs or supporting analyses (e.g., eliminating water sources and preferential pathways for surface water). Other potential interim measures require careful consideration of feasibility, benefits, the protection of human health and the environment, and impacts to tank farm operations including safety and worker risk, and therefore may require improved understanding of subsurface conditions and processes (e.g., placement of surface barriers to limit infiltration).

Initial interim measures or activities that directly support identification of interim measures, and that do not require vadose zone characterization include the following:

- (1) Upgrading leak tight caps on monitoring drywells around SSTs.
- (2) Conducting an engineering study of other potential near-term interim measures (e.g., identifying and isolating additional potentially leaking water lines in or near the SST WMAs, sealing additional abandoned wells in or near the SST WMAs, and controlling surface drainage and ponding). Completion of this study will aid scheduling additional interim measures that can be implemented in the near term prior to or concurrent with vadose zone characterization.
- (3) Conducting a workshop as part of DOE's Innovative Treatment Remedial Demonstration Project to identify concepts for interim surface barriers that could be installed at the SST WMAs to limit migration of contaminants in the vadose zone prior to tank farm closure. Results and recommendations of this workshop, as well as results and conclusions from recommended test and evaluation activities, will be summarized following their completion and a copy submitted to Ecology.

Ecology regulatory decisions and DOE decisions on placing interim surface barriers, controlling retrieval leaks, readying tanks for closure by removing waste, and closing tank farms will be aided by improved understanding of subsurface conditions and processes. Information regarding TWRS vadose zone activities may be found at Table Four (4) of the DOE's Tank Waste Remediation System Vadose Zone Program Plan (DOE/RL-98-49, July 1998). Table 1 is a listing of those activities underway in FY 1999, those which will start or continue after FY 1999, and those that are included in the milestone section of this Change Control Form.

Table 1

Activity	Underway In FY 1999	Will Start or Continue After FY 1999	Included in Milestone Section of this Change Control Form
Initial activities for the management of existing vadose zone contamination:			
1) Water line testing.		X	X
2) Seal abandoned wells, cap boreholes.	X	X	X
3) Gather data on tank farm surface water runoff and ponding.	X		X
4) Define drainage control remedies, and implement minor changes.		X	X
5) Implement major surface drainage controls if required.		X	X
6) Conduct studies and field testing for interim surface barriers.	X	X	X
7) Provide interim surface barriers if required.			X
8) Prepare detailed characterization work plans.	X	X	X
9) Analyze historic gross gamma logging data.	X		
10) Conduct supporting analyses for initial characterization campaign.	X		
11) Characterize the four SST WMAs that are under RCRA assessment (includes characterization boreholes with fieldwork and initial borehole installation to begin in July 1999 pending Ecology approval).	X	X	X
12) Borehole 41-09-39 decommissioning and sampling.	X		
Vadose zone data and analyses needed for decisions regarding the mitigation of existing contamination:			
1) Compile and evaluate data/update work plan for corrective measures characterization.	X	X	X
2) Develop system model.	X		
3) Assess value/need for major corrective measures.		X	X
4) Continue required additional characterization for corrective measures.		X	X
5) Assess retrieval leak impacts and identify additional data needs.		X	X
6) Compile and evaluate data/update work plan for retrieval.		X	X
7) Continue required characterization for retrieval.		X	X
Vadose zone data and analyses needed for decisions on how to close SST tank farms:			
1) Assess readiness to proceed with closure.		X	X
2) Compile and evaluate data/update work plan for closure.		X	X
Surveillance and maintenance activities:			
1) Complete baseline logging and issue final tank farm reports.	X	X	X
2) Conduct surveillance for changes in baseline.	X	X	
3) TWRS expense for maintaining RCRA monitoring well network (e.g., characterization information obtained from replacement well installation)	X	X	
Process improvement activities identified to date:			
1) Develop and deploy improved technologies.		X	
2) Conduct external scientific peer review.	X	X	

Interim milestones and associated target dates documenting Initial SST WMA Interim measures, Initial investigations of the SST WMAs, and initial regulatory documentation established by approval of this change request are as follows:

M-45-50	Complete development of a spectral gamma logging baseline for SST farms.	September 2000
M-45-50-T01	Issue final baseline spectral gamma logging report for A tank farm.	March 1999
M-45-50-T02	Issue final baseline spectral gamma logging report for T tank farm.	September 1999
M-45-50-T03	Issue final baseline spectral gamma logging report for B tank farm.	March 2000
M-45-51	Submit to Ecology for review and approval as an Agreement primary document DOE's Phase 1 RFI/CMS Work Plan for Single-Shell Tank (SST) Waste Management Areas (WMAs).	August 1999

The RFI/CMS Work Plan will provide the overall framework within which site-specific SST WMA RFI/CMS Work Plan addenda will be prepared. The Phase 1 RFI/CMS Work Plan will provide the framework and requirements for the initial investigation of SST WMAs under RCRA assessment. The SST WMA RFI/CMS Work Plan will be designed to meet regulatory objectives which shall include the following: (1) compliance with interim status corrective action requirements of the HWMA and RCRA, (i.e., requirements applicable in the instance of releases from a TSD facility), (2) the generation of groundwater/vadose zone characterization data/information necessary to: (i) define the sources, nature, and extent of vadose zone and aquifer contamination, (ii) identify actual and potential receptors (via air, land, surface water and groundwater pathways), (iii) determine the need for additional interim measures or interim corrective measures, and (3) support closure of SST TSDs under the HWMA and RCRA.

The Phase 1 RFI/CMS Work Plan will describe objectives, criteria that will be used in making groundwater/vadose zone decisions, technical framework for decision-making, regulatory framework, principal interfaces, task prioritization, planning activities, generic information and requirements for site-specific plans, and schedules. Coordination of SST WMA activities with related vadose zone and groundwater activities under DOE's Environmental Restoration Program will be documented (e.g., RCRA groundwater monitoring well installation and sampling, characterization of past practice sites, use of groundwater and vadose zone contaminant transport models, corrective actions at neighboring sites). (See also Initial work plan data evaluation and subsurface modeling).

Work implemented under the RFI/CMS Work Plan (including revisions and site specific SST WMA RFI/CMS Work Plan addenda) must be approved by Ecology in writing prior to implementation.

M-45-52	Submit to Ecology for review and approval as an Agreement primary document a site-specific SST WMA Phase 1 RFI/CMS Work Plan addenda for WMA S-SX.	October 1999
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This plan will describe and schedule the gathering of specific information for WMA S-SX Tank farms necessary to meet the objectives specified in the Phase 1 RFI/CMS Work Plan for the SST WMAs. The plan will also define specific locations and methods for sampling and analysis to meet work plan objectives. This plan will identify requirements for groundwater sampling from new vadose zone boreholes, and vadose zone sampling from planned groundwater monitoring wells. In addition, the plan will identify data needs from the characterization of past practice sites to resolve SST WMA data gaps.

M-45-52-T01	Submit to Ecology for review and approval as an Agreement secondary document a Preliminary site-specific SST WMA Phase 1 RFI/CMS Work Plan addenda for WMA S-SX.	April 1999
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Submittal of this Preliminary site-specific SST WMA Phase 1 RFI/CMS Work Plan addenda for WMA S-SX will enable initial fieldwork and borehole installation to commence in Fiscal Year 1999. This plan will describe and schedule the gathering of specific information for WMA S-SX Tank farms necessary to meet the objectives developed through a data quality objectives process. The plan will also define specific locations and methods for sampling and analysis to meet work plan objectives. This plan will identify requirements for groundwater sampling from initial vadose zone boreholes, and vadose zone sampling from planned groundwater monitoring wells. -

M-45-53	Submit to Ecology for review and approval as an Agreement primary document a site-specific SST WMA Phase 1 RFI/CMS Work Plan addenda for WMA B-BX-BY.	May 2000
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This plan will describe and schedule the gathering of specific information for WMA B-BX-BY necessary to meet the objectives specified in the Phase 1 RFI/CMS Work Plan for the SST WMAs. The plan will also define specific locations and methods for sampling and analysis to meet work plan objectives. This plan will identify requirements for groundwater sampling from new vadose zone boreholes, and vadose zone sampling from planned groundwater monitoring wells. In addition, the plan will identify data needs from the characterization of past practice sites to resolve SST WMA data gaps.

M-45-54	Submit to Ecology for review and approval as an Agreement primary document a site-specific SST WMA Phase 1 RFI/CMS Work Plan addenda for WMA T and WMA TX-TY.	December 2000
	<p>This plan will describe and schedule the gathering of specific information for WMA T and WMA TX-TY necessary to meet the objectives specified in the Phase 1 RFI/CMS Work Plan for the SST WMAs. The plan will also define specific locations and methods for sampling and analysis to meet work plan objectives. This plan will identify requirements for groundwater sampling from new vadose zone boreholes, and vadose zone sampling from planned groundwater monitoring wells. In addition, the plan will identify data needs from the characterization of past practice sites to resolve SST WMA data gaps.</p>	
M-45-55-T01	Submit to Ecology for review and comment as an Agreement secondary document a Field Investigation Report pursuant to the site-specific SST WMA Phase 1 RFI/CMS Work Plan addenda for WMA S-SX.	April 2001
M-45-55-T02	Submit to Ecology for review and comment as an Agreement secondary document a Field Investigation Report pursuant to the site-specific SST WMA Phase 1 RFI/CMS Work Plan addenda for WMA B-BX-BY.	May 2002
M-45-55-T03	Submit to Ecology for review and comment as an Agreement secondary document a Field Investigation Report pursuant to the site-specific SST WMA Phase 1 RFI/CMS Work Plan addenda for WMA T and WMA TX-TY.	June 2003
M-45-55	Submit to Ecology for review and approval as an Agreement primary document a Phase 1 RFI Report integrating results of data gathering activities and evaluations for WMAs S-SX, T, TX-TY, and B-BX-BY and related activities, including groundwater monitoring and impacts assessment using Hanford Site groundwater models, with conclusions and recommendations.	February 2004
M-45-56	Complete implementation of agreed-to interim measures.	TBD
	<p>Specific interim measures will be implemented pursuant to Agreement commitments (e.g., see interim milestone M-45-57). Interim measures may also be required by Ecology, proposed by DOE in the SST WMA RFI Report (M-45-55) (or engineering studies including that addressed in target milestone M-45-56-T01), or established by agreement of the parties at any time during the Corrective Action process. Also see Table 1 of Agreement Change Control Form #M-45-98-03.</p> <p>Ecology and DOE agree, at a minimum, to meet yearly (by July or as needed to support annual budgeting) for the specific purpose of assessing the adequacy of information, and the need for the establishment of additional Agreement interim measures. Additional Agreement interim measures shall be documented through establishment of Interim Milestones and associated Target Dates as agreed necessary by the parties</p>	

M-45-56-T01	Summarize results of engineering studies and recommendations on isolating water lines in or near SST WMAs, sealing abandoned wells in or near SST WMAs, and controlling surface drainage at SST WMAs and submit these results to Ecology. This engineering study will include data regarding SST WMA surface water runoff and ponding as necessary to support a decision on whether drainage controls are needed to prevent or reduce surface water infiltration.	October 1999
M-45-57	Complete upgrading of leak-tight caps on monitoring drywells around SSTs.	June 1999
M-45-58	Submit to Ecology for review and approval as an Agreement primary document a Corrective Measures Study for interim corrective measures (pending results and conclusions in the Phase 1 RFI Report—Milestone M-45-55 or subsequent RFI reports).	TBD
M-45-59	Control surface water infiltration pathways as needed to control or significantly reduce the likelihood of migration of subsurface contamination to groundwater at the SST WMAs (pending the CMS Report, Milestone M-45-58, and implementation of other interim corrective measures. Decisions on controlling surface water infiltration pathways will be made by evaluating the role of surface water infiltration and the transport of subsurface contamination to groundwater. Based on the Corrective Measures Study (M-45-58) interim surface barriers and/or other infiltration controls may be required.	TBD
M-45-59-T01	Summarize results of Innovative Treatment Remedial Demonstration workshop, with conclusions and recommendations for test and evaluation of interim surface barrier concepts and submit these results to Ecology.	July 1999
M-45-60	Submit to Ecology for review and approval as an Agreement primary document DOE's RFI/CMS Work Plan for SST WMAs. This RFI/CMS Work Plan shall document the additional interim measures and further investigations needed for decisions on retrieval, closure, and corrective measures for the SST WMAs.	6 months following RFI Report approval.

- 1) Attachment One: Initial Single-Shell Tank Waste Management Areas and associated sites.
- 2) Attachment Two: Utilization of the HWMA and RCRA corrective action processes for SST WMA and associated site groundwater/vadose zone decision making in coordination with SST tank farm closure under Agreement milestone M-45.

Attachment One:

Initial Single-Shell Tank Waste Management Areas and Associated Sites.

Tank Waste-Related Units and ER Sites Associated with SST WMAs ¹		
WMA	Within WMA Boundary	Outside WMA Boundary
B-BX-BY	Single Shell Tanks (40)	216-242-B Evaporator
	241-B-151 Diversion Box	216-B-7A Crib
	241-B-152 Diversion Box	216-B-7B Crib
	241-B-153 Diversion Box	216-B-8 Crib
	241-B-252 Diversion Box	216-B-8TF Tile Field
	241-B-301B Catch Tank	216-B-11A Reverse Well
	241-BR-152 Diversion Box	216-B-11B Reverse Well
	241-BX-153 Diversion Box	216-B-35 Trench
	241-BX-302A Catch Tank	216-B-36 Trench
	241-BXR-151 Diversion Box	216-B-37 Trench
	241-BXR-152 Diversion Box	216-B-38 Trench
	241-BXR-153 Diversion Box	216-B-39 Trench
	241-BYR-152 Diversion Box	216-B-40 Trench
	241-BYR-153 Diversion Box	216-B-41 Trench
	241-BYR-154 Diversion Box	216-B-41A Trench
	242-B-151 Diversion Box	216-B-41B Trench
	244-BXR Receiving Vault	216-B-41C Trench
	2607-EB Septic Tank	216-B-41D Trench
		216-B-42 Trench
		216-B-43 Crib
		216-B-44 Crib
		216-B-45 Crib
		216-B-46 Crib
		216-B-47 Crib
		216-B-48 Crib
		216-B-49 Crib
		216-B-50 Crib
		216-B-51 French Drain
		216-B-57 Crib ²
T	Single-Shell Tanks (16)	216-T-5 Trench
	T-7 Crib	216-T-7-TF Tile Field ³
	T-32 Crib ⁴	216-T-14 Trench
	241-T-151 Diversion Box	216-T-15 Trench
	241-T-152 Diversion Box	216-T-16 Trench
	241-T-153 Diversion Box	216-T-17 Trench
	241-T-252 Diversion Box	
	241-T-301 Catch Tank	
	241-T-302 Catch Tank	
	241-TR-152 Diversion Box	
	241-TR-153 Diversion Box	

WMA	Within WMA Boundary	Outside WMA Boundary
TX-TY	Single-Shell Tanks (24) 242-T-151 Diversion Box 241-TX-153 Diversion Box 241-TX-302A Catch Tank 241-TX-302-XB Catch Tank 241-TXR Vault 241-TXR-152 Diversion Box 241-TXR-153 Diversion Box 241-TY-153 Diversion Box 241-TY-302A Catch Tank 241-TY-302B Catch Tank 244-TXR Vault 2607-WT Septic Tank 2607-WTX Septic Tank	216-T-18 Crib 216-T-19 Crib ² 216-T-19 TF Tile Field ² 216-T-21 Trench 216-T-22 Trench 216-T-23 Trench 216-T-24 Trench 216-T-25 Trench 216-T-26 Crib 241-T Evaporator ²
S-SX	Single-Shell Tanks (27) 241-S-152 Diversion Box 241-S-A Valve Pit 241-S-B Valve Pit 241-S-C Valve Pit 241-S-D Valve Pit 241-SX-151 Diversion Box 241-SX-152 Diversion Box 241-SX-302 Catch Tank	216-S-3 Crib ² 216-S-4 French Drain ² 216-S-21 Crib ² 216-S-25 Crib ² 241-S-151 Diversion Box 241-S-302B Catch Tank

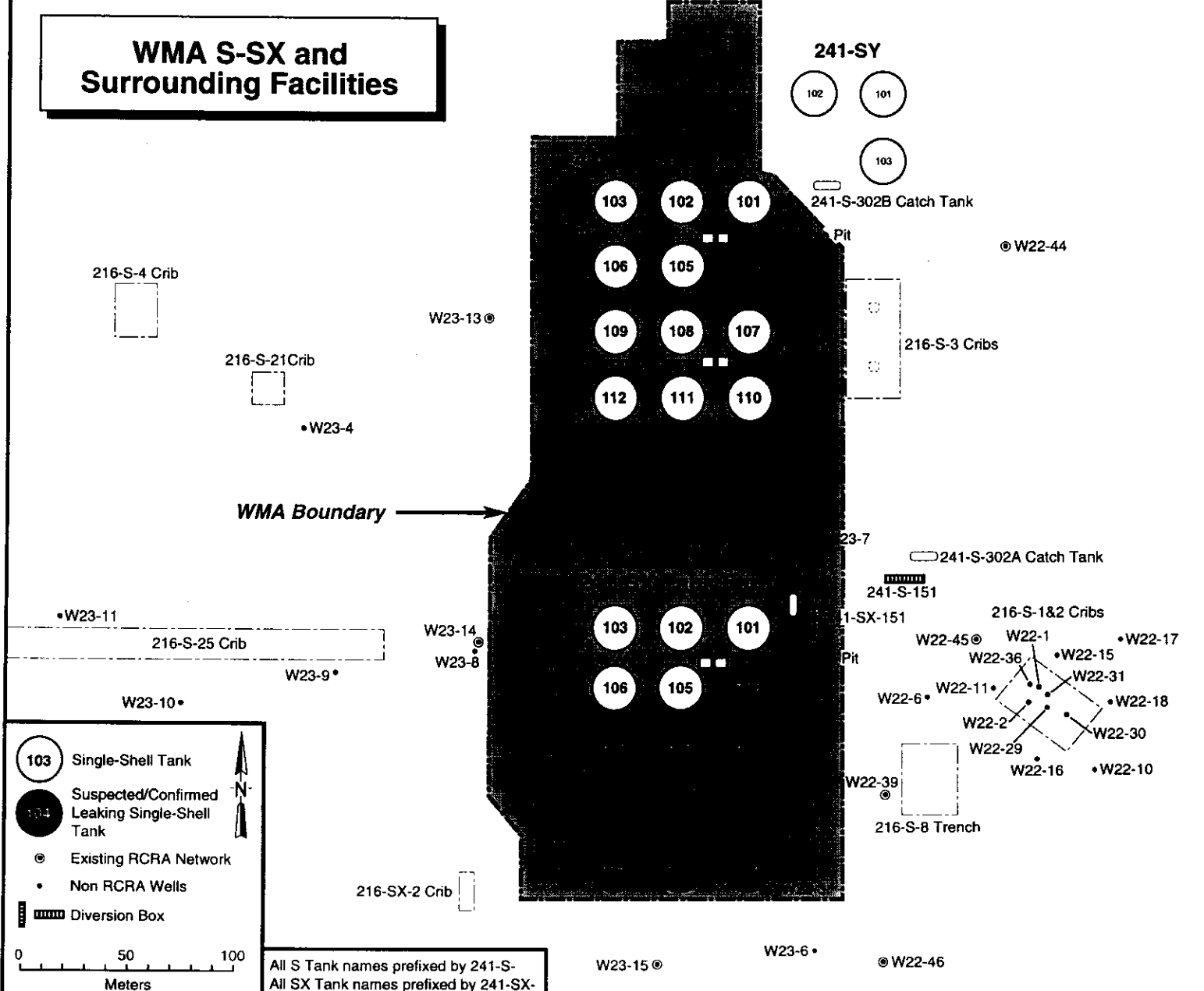
note 1: not including unplanned release (UPR) sites. For UPR sites see Appendix B of Tri-Party Agreement

note 2: unit handled condensate from evaporator operations or from self-boiling waste

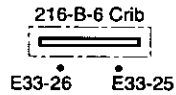
note 3: unit is partially inside WMA boundary

note 4: unit is partially outside WMA boundary

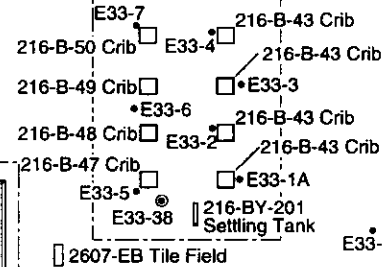
WMA S-SX and Surrounding Facilities



WMA B-BX-BY and Surrounding Facilities



12th Street



216-B-57 Crib

2607-EB Septic Tank
WCW Dry Well

E33-31

WMA Boundary

E33-8

216-B-41D Trench
216-B-41C Trench
216-B-41B Trench
216-B-41A Trench
216-B-41 Trench
216-B-40 Trench
216-B-39 Trench
216-B-38 Trench
216-B-37 Trench

216-B-42 Trench

216-B-36 Trench
216-B-35 Trench

E33-42

E33-32

E33-21

241-BY

244-BXR Receiving Valve

W 10th Street

241-BXR-151

241-BR-152

241-BXR-152

241-BYR-152

241-BX-153

241-BX-302A
Catch Tank

E28-8

Industrial Burial Ground - Trenches

12th Street

E33-12

E33-39 E33-11

216-B-51 French Drain

Baltimore Avenue

E33-15

216-B-8TF Tile Field

216-B-8 Crib E33-16

E33-17

216-B-7A Crib
216-B-7B Crib

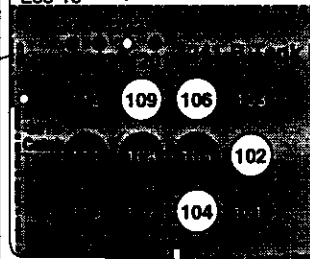
E33-19

E33-18

E33-20

216-B-11B Reverse Well

216-B-11A Reverse Well



Farm

WMA Boundary

E33-33

E33-36

Tile Field

2607-E9 Septic Tank

216-242-B Evaporator

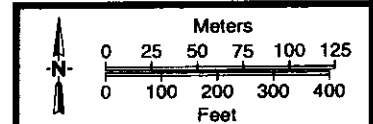
10th Street

Baltimore Avenue

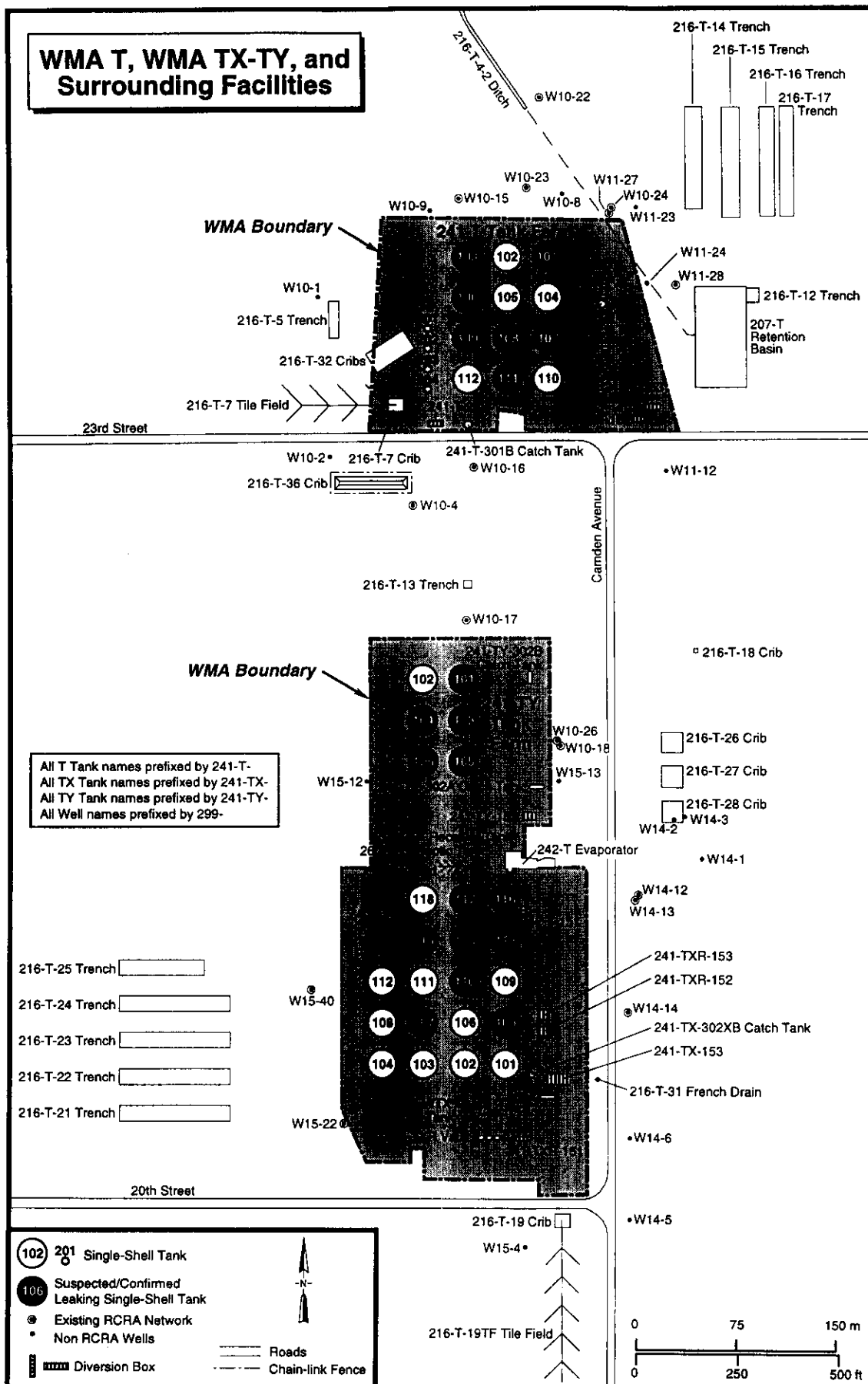
207-B
Retention
Basins

112	202	Single-Shell Tank
111	201	Suspected/Confirmed Leaking Single-Shell Tank
Chain-link Fence		
Roads		
Diversion Box		
Non-RCRA Monitoring Well		
RCRA Monitoring Well		
Vadose Zone Monitoring Well		

All B Tank names prefixed by 241-B-
All BX Tank names prefixed by 241-BX-
All BY Tank names prefixed by 241-BY-
All Well names prefixed by 299-



WMA T, WMA TX-TY, and Surrounding Facilities



Attachment Two:

**Utilization of the HWMA and RCRA Corrective Action Processes for
SST WMA and Associated Site Groundwater/Vadose Zone Decision
Making in Coordination with SST Tank Farm Closure Under
Agreement Milestone M-45.**

